

## FEATURES

- Logarithmic output
- Stable over specified temperature range
- Compact package (1.6 × 2.0 mm)
- Light sensitivity similar to human eye response curve
- Integrated photodiode and amplifier circuit

## APPLICATIONS

- Mobile Phones
- TV/Monitors
- Cameras

## DESCRIPTION

The GA1A1S200WP is an ambient light sensor that has a spectral response similar to that of the human eye. This response curve means the sensor is highly accurate when used as the basis of an ambient light sensor, or camera exposure sensor.

The integrated photodiode and amplifier circuit makes the GA1A1S200WP ideal for use in space-constrained applications, or for anywhere a sensor may be wanted but wasted space is not.

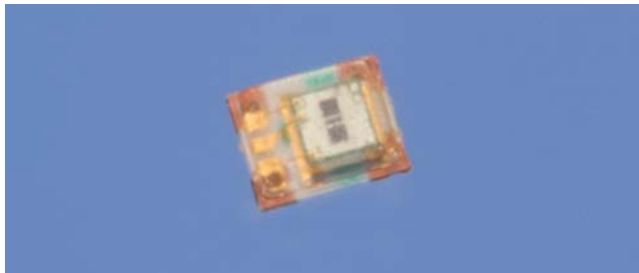


Figure 1. GA1A1S200WP Photo

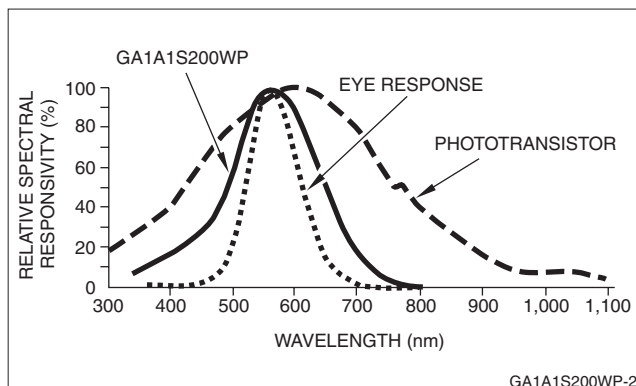


Figure 2. Spectral Response

## COMPOSITION AND USAGE

- This product is not designed for use in environments with high electromagnetic flux or ionized particle irradiation.
- This product does not contain any of the following materials, nor are any of the following materials used during the manufacture of this device: CFC<sub>s</sub>, Halon, Carbon Tetrachloride, 1.1.1-Trichloroethane (Methyl chloroform).
- This product does not contain chemical materials regulated by RoHS. These chemicals include: Lead and lead compounds; cadmium and cadmium compounds; mercury and mercury compounds, hexavalent chromium compounds, polybrominated biphenyls, polybrominated diphenyl ethers.
- Bypass capacitors should be used to stabilize the power supply. Capacitors between 0.01 and 0.1 μF should be connected within 1 cm of the package leads, directly between VCC and ground.

## CLEANING

When cleaning with solvent, the temperature must be kept no higher than 45°C and immersed for less than three minutes.

When cleaning with ultrasonic devices, use Ethyl alcohol, Methyl alcohol, or Isopropyl alcohol as the solvent. As cleaning conditions differ by bath size, ultrasonic power output, cleaning time, and PCB size, it is recommended that tests be performed using actual conditions to determine optimum cleaning.

## ELECTRICAL CHARACTERISTICS

See Table 1 and Table 2.

**Table 1. Absolute Maximum Ratings  
(Target Value)**

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	VCC	-0.3 to +7.0	V
Output Current	IO	1	mA
Power Dissipation	P	TBD	mW
Operating Temperature	TOPR	-40 to +85	°C
Storage Temperature	TSTG	-40 to +85	°C
Soldering Temperature	TSOL	TBD	°C

**Table 2. Electro-optical Characteristics (Target Value)**

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTES
Supply Voltage	VCC		2.3	2.5	3.2	V	
Supply Current	ICC	Ev = 1000 lux	40	70	150	mA	
Output Current	IO1	Ev = 100 lux	16	20	24	mA	
	IO2	Ev = 1000 lux	27	30	33	mA	1, 2
	IO3	Ev = 01 lux	—	(0.4)	—	mA	
Temperature Coefficient	a1	-30°C to +70°C Ev = 50 to 5500 lux	—	—	0.25	%/°C	
	a2	-0°C to +50°C Ev = 50 to 5500 lux	—	—	0.2	%/°C	
Peak Sensitivity	IP		—	560	—	nm	
Dynamic Range	D		3		55,000	lux	
Rise Time (10% to 90%)	TR1	-30°C to +70°C	—	—	150	μs	3
	TR2	Ev = 50 to 5500 lux	—	—	5	μs	3
Fall Time (10% to 90%)	TF1	-0°C to +50°C	—	—	150	μs	3
	TF2	Ev = 50 to 5500 lux	—	—	15	μs	3
Spectral Sensitivity	F	Fluorescent light/ Tungsten lamp	0.8		1.2	—	
Linearity	L1	Ev = 3 – 7 lux	-40	0	+40	%	
	L2	Ev = 9 – 107 lux	-20	0	+20	%	
	L3	Ev = 133 – 9,244 lux	-10	0	+10	%	
	L4	Ev = 11,556 – 55,000 lux	-5	0	+5	%	

### NOTES:

- Sensor output vs. illuminance is logarithmic.  $IO = 10 \times \log(Ev)$  in mA;  $R_{out} = 26.7 \text{ k}\Omega$
- Ev = Illuminance by CIE standard light source A (tungsten lamp).
- Illuminance is white LED.

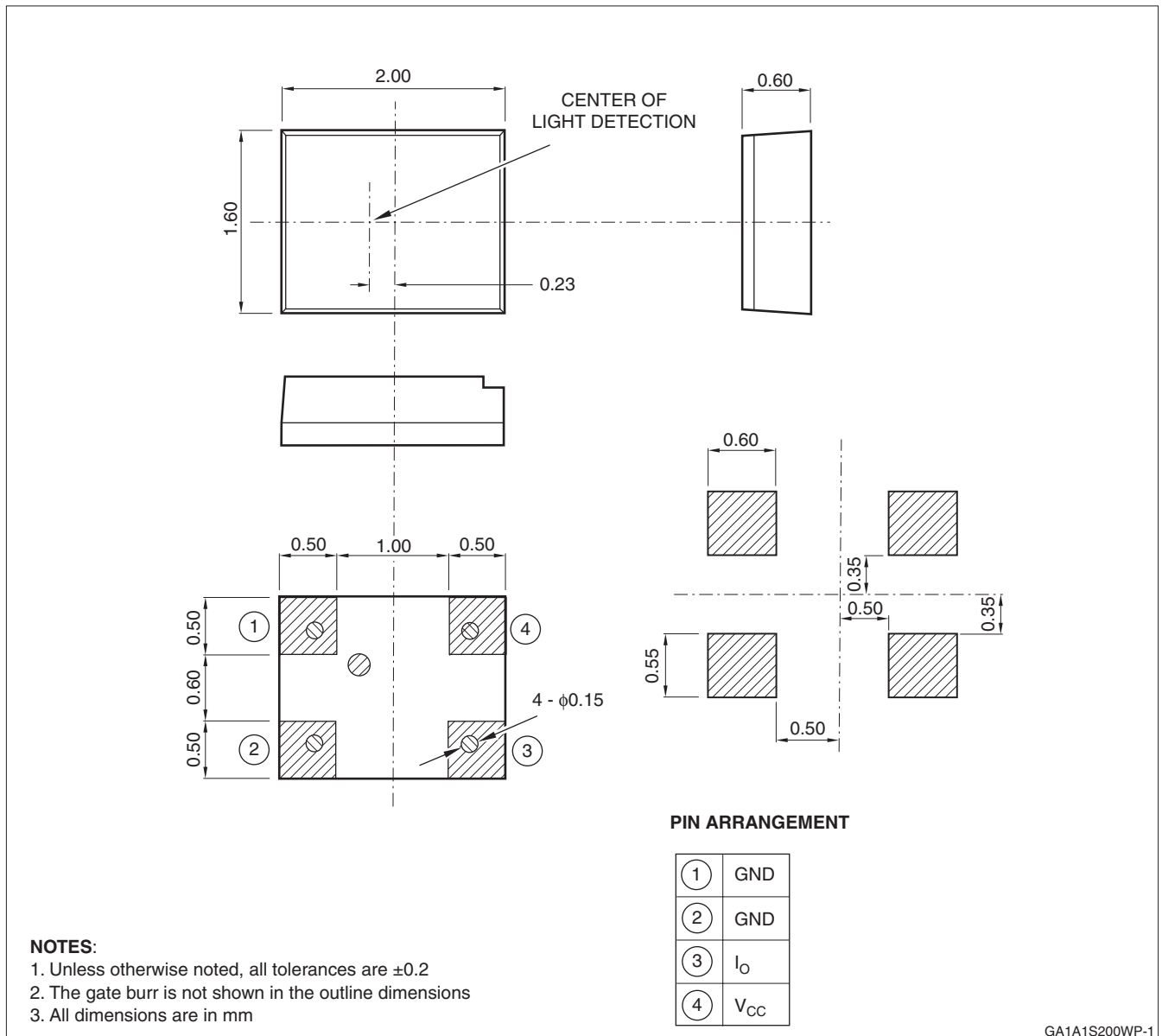


Figure 3. Outline Drawing

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